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## FINANCIAL MEASURES USING Z- SCORES WITH SPECIAL REFERENCE TO BAJAJ AUTO LIMITED

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## ABSTRACT

Financial statements through light on financial position of the business. Management is interested in knowing financial status of the firm. Ratio analysis is the most powerful tool which helps to spot out financial weaknesses of the firm. It helps them to take corrective actions. The future plans of the firm should be laid down in view of the information reported in these statements. This paper focus on financial measures using Altman z- scores with reference to Bajaj Auto Limited the Altman z-score is a measure of a company's health and likelihood of bankruptcy. Several key ratios such as Working capital to total assets, Sales to total assets, Reciprocal of debt-equity ratio, Earnings before interest and taxes to total assets, Retained earnings to total assets are used in the formulation of an Altman Z-Score Value. Altman Z-Score calculation is used to estimate the probability of business bankruptcy of a company. The Altman Z-Score is a quantitative balance-sheet method of determining a company's financial health.

## KEYWORDS

Bankruptcy, Coefficients, Financial Condition, Financial statements, Financial health, Z-score.

## INTRODUCTION

Financial statements provides some extremely useful information to the extent that the balance sheet mirrors the financial position on a particular date in terms of structure of assets, liabilities and owner's equity and Retained earnings so on. Users of financial statements can get further insight about financial strengths and weaknesses of the firm if they properly analyze information reported in these statements. Management should be particularly interested in knowing financial strengths of the firm to make their best use and to be able to spot out financial weaknesses of the firm to take suitable corrective actions. The future plans of the firm should be laid down in view of the firm's financial strengths and weaknesses. Thus, financial analysis is the starting point for making plans, before using any sophisticated forecasting and planning procedures. Financial analysis is the process of identifying the financial strengths and weaknesses of the firm by properly establishing relationships between the items of the balance sheet and the profit and loss account. Financial analysis can be undertaken by the management of the firm or by parties outside the firm like owners, creditors, investors and others. The focus of financial analysis is on key figures in the financial statements and the significant relationship that exists between them. The analysis of financial statements is a process of evaluating the relationship between components parts of financial statements to obtain a better understanding of the firm's position and performance.

Ratio analysis is a widely –used tool of financial analysis. It can be used to compare the risk and return relationships of firms of different sizes. It is defined as the systematic use of ratio to interpret the financial statements. The term ratio refers to the numerical or quantitative relationship between two items or variables. The relationship between two accounting figures, expressed mathematically, is known as financial ratio. Ratios help to summarize large quantities of financial data and to make qualitative judgment about the firm's financial performance. The **Altman Z-Score** is a measure of a company's health and **likelihood of bankruptcy**. The **Altman Z-Score** is a measure of a company's health and **likelihood of bankruptcy**. Several key ratios are used in the formulation of an Altman Z-Score Value. The Z-Score model is the 1960's brainchild of Professor Edward Altman of NYU. Several key ratios such as Working capital to total assets, Sales to total assets, Reciprocal of debt-equity ratio, Earnings before interest and taxes to total assets, Retained earnings to total assets are used in the formulation of an Altman Z-Score Value.

## RESEARCH METHODOLOGY

The entire study is based on secondary data, procured and extracted from the financial statements of Bajaj auto limited covering a period of five years from 2009-2013. For the purpose of analyzing the financial performance of the selected company, two kinds of tools have been used. They are statistical tools and financial ratios. The statistical tools used in this study are: Arithmetic Mean and Correlation have been used extensively. Various kinds of ratios have been used as the financial tools for the purpose of analysis. They are Profitability, Liquidity, Leverage, and turnover ratios.

## FINANCIAL TOOLS

## • RATIO ANALYSIS

Working capital to total assets

Retained earnings to total assets

Earnings before interest and taxes to total assets

Reciprocal of debt-equity ratio

Sales to total assets

**'Z'- SCORE INGREDIENTS****1)X<sub>1</sub>(WORKING CAPITAL /TOTAL ASSETS)**

This ratio measures the liquidity position of company. The difference between current assets and current liabilities excluding short term borrowing is called working capital. It measures the firm's potential reservoir of funds for the given period.

**2)X<sub>2</sub>(RETAINED EARNINGS/ TOTAL ASSETS)**

It indicates the amount reinvested out of profits, which reflects the extent of company's profit for further expansion. The firms with retained earnings to total assets have financed their assets with the help of retained earnings and have not utilized as much debt. It highlights use of internal funds rather than external high risk capital.

**3) X<sub>3</sub>(EARNINGS BEFORE INTEREST AND TAXES / TOTAL ASSETS)**

This shows profitability in terms of earning power of the company and total assets of the company.

**4)X<sub>4</sub>( DEBT/EQUITY)**

The relationship between borrowed funds and owner's capital is a measure of long term financial solvency of a firm. This relationship is shown in debt – equity ratio. This ratio reflects claims of creditors and shareholders against the assets of the firm.

**5)X<sub>5</sub>(SALES /TOTAL ASSETS )**

This is a standard turnover measure. This ratio shows the firm's ability in generating sales from all financial resources committed to total assets. It indicates sales with company's total assets and measure of management's ability to deal with competitive conditions.

**ALTMAN GUIDELINES FOR HEALTHY ZONE**

Altman guidelines for healthy zone help to judge financial health of Bajaj auto company during study period 2009-2013.

For Public Companies, the Model is calculated as follows:  $Z = 1.2 \times X_1 + 1.4 \times X_2 + 3.3 \times X_3 + 0.6 \times X_4 + 1.0 \times X_5$ .

**TABLE 1: ALTMAN GUIDELINES**

SITUATION	Z-SCORE	ZONES	REMARKS
1	Below 1.8	Not healthy and more risk of Catastrophe	This score clearly indicates failure which probably occur within period of 2 years
2	BETWEEN 1.8 and 2.7	Not healthy	Good chance of the company going bankrupt within 2 years of operations from the date of financial figures given
3	BETWEEN 2.7 and 2.99	On Alert	This zone is an area where one should 'Exercise Caution'
4	ABOVE 3.0	Safe	The company is considered 'Safe' based on the financial figures only

**THE INTERPRETATION OF ALTMAN Z-SCORE**

Z-SCORE ABOVE 3.0 –The company is considered 'Safe' based on the financial figures only.

Z-SCORE BETWEEN 2.7 and 2.99 – 'On Alert'. This zone is an area where one should 'Exercise Caution'.

Z-SCORE BETWEEN 1.8 and 2.7 – Good chance of the company going bankrupt within 2 years of operations from the date of financial figures given.

Z-SCORE BELOW 1.80- Probability of Financial Catastrophe is Very High.

If the Altman Z-Score is close to or below 3, then it would be as well to do some serious due diligence on the company in question before even considering investing.

**ANALYSIS AND INTREPRETATION****WORKING CAPITAL TO TOTAL ASSETS RATIO ( $X_1$ ) OF BAJAJ AUTO LIMITED**

Working capital to Total assets= WORKING CAPITAL /TOTAL ASSETS

**TABLE 2: WORKING CAPITAL TO TOTAL ASSETS RATIO ( $X_1$ ) OF BAJAJ AUTO LIMITED**

Year	Working capital(Rs in crores)	Total assets(Rs crores)	Ratio(in times)
2009	-218.43	3408.15	0.06409
2010	-1300.06	4078.34	0.31877
2011	-1133.8	5154.96	0.21994
2012	-229.65	6204.81	0.03701
2013	-544.17	8163.71	0.06666
Average			0.141294

**INTERPRETATION**

Working capital of Bajaj auto limited shows negative as their current liabilities are more than current assets. During 2009-2010 ratio was increased (0.06409 to 0.31877) because of increase in total assets. During 2010-2011(0.31877 to 0.21994) and 2011-2012(0.21994- 0.03701) ratio was decreased in spite of increase in total assets But in the year 2013 ratio has increased slightly(0.03701 to 0.06666) from when compared to previous year(2012) because of increase in total assets. The correlation between working capital to total assets is positive

**RETAINED EARNINGS TO TOTAL ASSETS RATIO( $X_2$ ) OF BAJAJ AUTO LIMITED**

Retained earnings to Total assets ratio= Retained earnings/ total assets

**TABLE 3: RETAINED EARNINGS TO TOTAL ASSETS RATIO( $X_2$ ) OF BAJAJ AUTO LIMITED**

Year	Retained earnings(Rs in crores)	Total assets(Rs in crores)	Ratio(in times)
2009	1668.11	3408.15	0.489447
2010	2572.25	4078.34	0.63071
2011	4517.85	5154.96	0.876408
2012	5792.35	6204.81	0.933526
2013	7775.93	8163.71	0.9525
Average			0.7765182

**INTERPRETATION**

Retained earnings of Bajaj auto limited has increased from year to year during study period (from 0.489447 to 0.9525 during 2013) Total assets also has increased every year. During study period Retained earnings to Total assets ratio increased year after year due to increase in retained earnings and total assets The correlation between Retained earnings to total assets is positive.

**EARNINGS BEFORE INTEREST AND TAXES TO TOTAL ASSETS( $X_3$ ) OF BAJAJ AUTO LIMITED**

Earnings before interest and taxes to total assets=EBIT/TOTAL ASSETS

**TABLE 4: EARNINGS BEFORE INTEREST AND TAXES TO TOTAL ASSETS( $X_3$ ) OF BAJAJ AUTO LIMITED**

Year	EBIT(Rs in crores)	Total assets(Rs in crores)	Ratio(in times)
2009	1089.87	3408.15	0.319783
2010	2,542.71	4078.34	0.623467
2011	4,433.44	5154.96	0.860034
2012	4,149.57	6204.81	0.668767
2013	4,430.74	8163.71	0.542736
Average			0.602957

**INTERPRETATION**

During 2009-2010 EBIT and total assets both were increased. Even ratio also from 0.319783 increased to 0.623467. In 2010-2011 also same trend continued( 0.623467 to 0.860034 ).In spite of continues increase for first 2 years ,during 2011-2012(0.860034 to 0.668767) 2012-2013(0.668767 to 0.542736 )showed decrease in the ratio in spite of increase in total assets . The correlation between Earnings before interest and taxes to total assets is positive.



**DEBT-EQUITY RATIO(X<sub>4</sub>) OF BAJAJ AUTO LIMITED**

DEBT-EQUITY RATIO= DEBT/EQUITY

**TABLE 5: DEBT-EQUITY RATIO(X<sub>4</sub>) OF BAJAJ AUTO LIMITED**

Year	VALUE OF EQUITY(Rs in crores)	TOTAL DEBT(Rs in crores)	Ratio(in times)
2009	144.68	2833.5	0.051061
2010	144.68	3394.51	0.042622
2011	289.37	2814.44	0.102816
2012	289.37	2342.16	0.123548
2013	289.37	2866.41	0.100952
<b>Average</b>			0.0842

**INTERPRETATION**

Equity of the company has increased from year 2010 to 2011. Even debt also increased from 2009 to 2010, but later years reduced and slightly increased in the year 2013. Ratio of Bajaj auto limited has reduced from 2009 to 2010 (0.051061 to 0.042622). Next two years ratio has increased (2011-0.102816, 2012-0.123548) but during 2012-2013 ratio reduced (0.123548 to 0.100952) due to increase in debt with no corresponding increase in Equity. The correlation between is Debt-Equity is negative.

**SALES TO TOTAL ASSETS (X<sub>5</sub>) OF BAJAJ AUTO LIMITED**

Sales to Total assets ratio= Sales /Total assets

**TABLE 6: SALES TO TOTAL ASSETS (X<sub>5</sub>) OF BAJAJ AUTO LIMITED**

Year	SALES(Rs in crores)	Total assets(Rs in crores)	Ratio(in times)
2009	9,310.24	3408.15	2.731758
2010	12,420.95	4078.34	3.04559
2011	17,386.51	5154.96	3.372773
2012	20,475.74	6204.81	3.299979
2013	19,997.25	8163.71	2.44953
<b>Average</b>			2.979926

**INTERPRETATION**

Sales of the company has increased year after year from 2009 till 2012, but during 2012-2013 sales has decreased. Total assets of the company increased during the study period. Ratio of the company has increased during 2009-2011 (2.731758 to 3.372773) Next 2 years it has reduced (3.299979 to 2.44953) the correlation between Sales to Total assets is positive

**TABLE 7: 'Z' SCORE INGREDIENTS**

INGREDIENTS	FINANCIAL RATIOS	2009	2010	2011	2012	2013	MEAN	R
X <sub>1</sub>	working capital /total assets	0.06409	0.31877	0.21994	0.03701	0.06666	0.141294	0.197398
X <sub>2</sub>	Retained earnings /Total assets	0.489447	0.63071	0.876408	0.933526	0.9525	0.7765182	0.992306
X <sub>3</sub>	EBIT / Total assets	0.319783	0.623467	0.860034	0.668767	0.542736	0.602957	0.805967
X <sub>4</sub>	Debt/Equity	0.051061	0.042622	0.102816	0.123548	0.100952	0.0842	-0.6458
X <sub>5</sub>	Sales /Total assets	2.731758	3.04559	3.372773	3.299979	2.44953	2.979926	0.883439

**INTERPRETATION**

The correlation between "z" score ingredients is satisfactory at all four X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>5</sub> except one X<sub>4</sub>. It indicates that the relationship between these are cooperating each other except in case of X<sub>4</sub>. There is a positive correlation between various ingredients except X<sub>4</sub> which shows negative correlation.

**TABLE 8: BAJAJ AUTO LIMITED 'Z' SCORE USING WEIGHTED FACTORS**

INGREDIENTS	FINANCIAL RATIOS	2009	2010	2011	2012	2013	Mean
X <sub>1</sub>	working capital /total assets	0.07691	0.38252	0.26393	0.04441	0.07999	0.1695528
X <sub>2</sub>	Retained earnings /Total assets	0.685226	0.882994	1.226971	1.306936	1.3335	1.0871255
X <sub>3</sub>	EBIT / Total assets	1.055284	2.057441	2.838112	2.206931	1.791029	1.9897594
X <sub>4</sub>	Debt/Equity	0.030637	0.025573	0.06169	0.074129	0.060571	0.0505199
X <sub>5</sub>	Sales /Total assets	2.731758	3.04559	3.372773	3.299979	2.44953	2.979926
<b>Z-score</b>		4.5798112	6.394122	7.763474	6.932387	5.714622	

**Z-SCORE VALUE****INTERPRETATION**

To determine the financial health of the Bajaj Auto limited, Researcher used Z score model which provides road map to judge financial soundness of the business. The table shows Z score value of the company. As per Altman guidelines, the Z score value of the Bajaj Auto limited was calculated. Z-SCORE above 3.0 –The company is considered 'Safe' based on the financial figures for the study period between 2009-2013 as z score is above 3.0. Average z score value during study period was 6.2768

**FINDINGS**

- Working capital of Bajaj auto limited showed negative as their current liabilities are more than current assets during study period between 2009-2012. But total assets of the company have increased from year to year.
- Retained earnings and Total assets of the company have also increased from year after year. Ratios (0.685226, 0.882994, 1.226971, 1.306936, and 1.3335) also have increased continuously during 2009-2012.
- Equity has increased but some fluctuations were observed in total debt of the company. average ratio during the period was 0.602957
- Sales have increased tremendously except during 2013. Ratio also increased except lost year (2.731758, 3.04559, 3.372773, 3.299979, 2.44953)

**SUGGESTIONS**

- The company has to maintain standard current ratio (2:1) to overcome problem of negative working capital and for effective utilization of funds.
- The company should allot some quota to the working capital requirements.

❖ It should try to reduce debt funds which is quiet risky and can concentrate on own funds.

## CONCLUSION

Altman Z-Score calculation is helpful to estimate the probability of business bankruptcy of a company. In determining a company's financial health, Bajaj Auto limited can be considered as "Safe" company which clearly indicates that has a low probability of bankruptcy as Altman Z-Score is greater than 3.0. This Z score help the company to judge financial soundness of the company

## REFERENCES

1. I.M. Pander, *Financial Management*, Eighth edition, Visas publishing house private limited, New Delhi, pp. 108-112, 2010.
2. M.Y. Khan and P.K. Jain, *Basic Financial Management*, Second edition, The McGraw. Hill companies, pp. 4.2-4.10, 2009.



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